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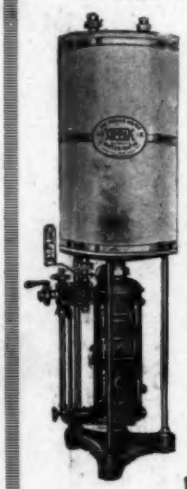

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INDEX TO CONTENTS, PAGE 9

ADVERTISERS' INDEX, PAGE 22

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AMERICAN
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Getting Ready for the Gas Industry of Tomorrow

Viewpoints Exist That Are Retrogressive — Conditions Have Been, and Are, Such as to Discourage New Means for the Better Utilization of Gas — There Must of Necessity Be Changes

By EDWIN DEAN

We have all pictured more or less what the gas industry of to-morrow will be. We realize that, eventually and inevitably, it must be a keystone industry of the nation, but it is doubtful if any of us realize how near at hand this gas industry of to-morrow actually is.

If we did we would probably be making greater haste in changing some of the viewpoints now cherished and many of the conditions that combine to hold back the gas industry even as it is to-day, but which in the gas industry of to-morrow would be small-job stuff to an intolerable degree.

Not Lack of Market for Product that Holds Enlargement Back

It is not lack of possible market for gas, or lack of market for the prodigious quantities of by-products that gas production on the scale that will characterize the gas industry of to-morrow will involve, that holds back the dawn of that greater day. It is simply that period of readjustment that is necessary for the gas companies to catch up on the losses caused by the conditions of the last few trying years, and to find the capital to make the extensions that it might be profitable for them to make even to-day were it economically possible.

The gas industry of to-morrow is going to furnish a very considerable proportion of the country's industrial fuel. It is going to furnish a low-cost gas for house heating. It will furnish a considerably bigger proportion of the country's artificial lighting, and, in fact, may provide the prime mover to generate the electricity that will supply the proportion of artificial illumination that it does not supply direct.

A Principal Source of Motor Fuel

The gas industry of the future will become a principal source of motor fuel. It will be one of the basic rocks upon which the American dyestuffs industry, American agriculture, etc., are founded.

The fuels it produces, gas and by-product fuels, will provide heat for the country's homes and workplaces, the country's meals and do the country's work.

No obstacle can prevent the gas industry attaining this plane. Obstruction may delay it, but it cannot stop it.

Those who have become gas men as their life's work have, therefore, but one choice. If we would continue gas men we must correct all viewpoints and conduct that are not harmonious and consistent with the requirements that such a gas industry will impose upon us.

Gas Lighting Not a Business, but a Means to an End

We must cease from looking upon gas lighting as a branch of the business and must come to look upon it as a means to an end. The individual house is our province. It might be possible to induce an architect to pipe a house because it may be that, at some time or another, a portable heater might be wanted in this room or that. But this is contrary to experience. Gas lighting is the logical wedge by which piping throughout may be influenced, and piping throughout is the wedge by which portable heaters and other auxiliaries may be gotten in.

It lies within the gas man's power to make gas lighting a more effective wedge. Unfortunately, there has not been a sufficiently aggressive attitude on the gas man's part towards open-flame burners and the five-and-ten-cent-store and department-store type of gas mantle lighting service, for gas lighting, even with manties, to have a generally high repute.

We have been limited in arguments for gas piping for lighting in housings to hold out the promise of possible improvements to the architect and to throw a scare into him by dwelling on the uncertainties of electric lights.

We can and should make gas lighting so good that every man will insist that the volition of using it in any room in his own house should rest with him rather than

the architect. Gas lighting as an *idea* cannot be sold alone by the canvasser. The company manager, the plant superintendent, the superintendent of distribution and the lighting maintenance man must also put a shoulder to the wheel.

Viewing gas lighting as a means to an end rather than a branch of the business will give us our justification for this effort that seems excessive in relation to the business to be gotten. It will also be a final squelcher for those few throwbacks who still cherish the viewpoint that the gas company has something to gain by a continuance of wasteful and inefficient lighting methods.

Where Credit Is Due

There is a disinclination on the part of all of us to go out of our way to find a new reason to heap praise upon the electric industry. Our electric friends are so prone to extol their own virtues that the rest of us sort of feel that any assistance on our part is superfluous.

But there is a fascination to the electric supplies display room—an ever-live interest to the wares it offers. Why?

There is always something new to be found there. Whenever we get to thinking that there is no conceivable convenience for which there cannot be found an electric device to supply, we drop into a display room and, lo, we find a half-dozen that had never occurred to us. Whenever we get the idea into our heads that in our equipment we have exhausted the last resource in the way of economical usage, we pass through the central station's branch office and stop on our way several times to view a still better means. Equipping one's home electrically is a task that is never finished. There are countless conveniences, countless means of economy, that we feel we should have.

We acquire them by degrees in proportion to our resources. Should we ever by rare chance exhaust the list, we can be certain that immediately we will want to start all over again. There will be a vacuum cleaner, so vastly improved that we will feel we must absolutely junk the old, a milk warmer that is to our present appliances as the Olympic to Noah's Ark.

The electric industry has stimulated research and invention, and has grown as a consequence.

Our Attitude Towards Improved Devices

What has been our attitude towards new and improved methods for using gas?

The mantle lamp has been with us longer than some men now managing gas companies have lived. How many mantle lamps are now in use in proportion to open-flame burners? This, too, despite the fact that for months gas lighting through the open-flame burner, with present standards, almost generally cannot be said even to light.

Gas men not only did not lend encouragement to the mantle lamp. They fought it tooth and nail. Some few are still fighting it, or are, at least, so hostile as to be, in their indifference to the introduction of mantle lamps, said still to be fighting it.

There are available in the industrial field at least one system and at least one burner for utilizing gas in tasks hitherto monopolized by raw fuel that, even with gas on a standard price scale, make possible such economies and give in addition such advantages that their sales for the purpose should almost make themselves. A very small proportion of the installations made with either this system or this burner were sold by gas companies. All of them, it might be said, have been sold by the representatives of the manufacturers.

More, these representatives have had to contend even with the actual hostility of gas companies. Once sales were made, business handed literally to these gas companies on a golden platter, there was difficulty getting the service. In some cases war priorities had even to be invoked to compel service.

A manufacturer put out what he demonstrated to be an improved iron. In it were incorporated not only his own findings, but the findings of another on which he had to pay royalties as well. In his own city he has found it impossible to get his gas company to handle it, this despite the fact that the company there has testing facilities of its own to determine whether or not his *improvements* are improvements.

A range manufacturer who, it might be said, ought to have known better, since he had been long enough in the field to know it, put out an oven smaller than the size considered almost as standard. There was a real demand for a small oven. The manufacturer knew there would be a sale for a smaller oven. He made such a range, and then had to battle with the gas companies to get them to handle it.

Little Encouragement to Exploitation

There has been little encouragement to the development of new devices for the better utilization of gas by gas companies. Seemingly they detest anything that is new, that will compel them to exert their brains sufficiently to learn enough about it to successfully market it.

Inventions there will always be. The man with the inventive kink will exercise it. If his daily vocation happens to be in the gas field his inventions will naturally be related to gas supply in some manner.

But from the patent office to the commercial market is a long gap. If the gas industry is to prosper it must encourage manufacturers to bridge it, invite manufacturers to come into the field rather than fighting them away.

Coke a Problem

We must give deep and earnest thought to disposal of coke. The way to cheap gas, hence gas in general for industrial work, gas for house heating, etc., is quantity carbonization, with recovery and marketing of all possible by-products. The profitable and consistent disposal of coke is the obstacle. Other markets than the metallurgical field must be found and developed.

Readjustments in merchandising methods must be made. We must outsell the department stores, make the gas company the great gas-appliance mart. It has not been so, because the department store has been a real merchandiser. It has beaten us at every turn, because we have been amateurs.

Getting ready for the gas industry of the future will require deep thinking. It will require the utter elimination of all personal vanity in our viewpoint. We must view ourselves dispassionately, see ourselves as others see us, not as we would like to.

We will discover we have many shortcomings; no

more, perhaps, than the average man, but that is no justification.

Each shortcoming is a weakness. We must mercilessly rid ourselves of it.

Locating our imperfections is the first step towards getting ready for the gas industry of the future.

Labor Dilution a National Necessity

For Fifty Years the Conservation of Our Natural Resources and Economies in Their Production Have Been Sacrificed for Financial Gain—Our Ideas in the Near Future Will Change and Must Be Sacrificed to the Needs of World Welfare

The term "labor dilution" originated in England shortly after the declaration of war with Germany, according to Frederick A. Waldron, in a paper presented at the recent annual meeting of the American Society of Mechanical Engineers. It means the thinning out, or spreading, of the functions of the skilled workman among those that are less skilled, and a Bureau of Labor Dilution was therefore established by the Government to supervise and carry out its requirements.

The original objective was to employ less skilled workers for the purpose of accomplishing a given task in a shorter time. Economies heretofore unknown have been established and the fact brought before the manufacturer that many things were not at all necessary to the proper and efficient conduct of business. The bureau's work will become a national industrial asset and change the attitude of the employer and the employee to one of greater co-operation and higher efficiency.

Unintentionally, perhaps, and unconsciously, this bureau has created an element in labor dilution which was not in the original program, as it has already established in the minds of the consumer that waste of labor and materials is the greatest foe to labor dilution that a nation may have. This is a vital problem and the engineer must solve it in a scientific manner.

Selfish Ideas Must Go

For years following the war our ideals will change and must be sacrified to the needs of world welfare. That will be done to conserve and profits will become secondary. This will involve the engineering of men and materials in its broadest meaning, since the supplies of both have become so seriously depleted through the waste of war. When peace, prosperity and plenty prevail, there is an increased desire for ease, luxury and opulence by those who have accumulated wealth; and for lighter burdens and greater pay on the part of the workers. There is an inclination by all to neglect moral and patriotic responsibilities.

For fifty years the conservation of our national resources and economies in their production and use have been sacrificed for financial gain. During the past fifteen years the attitude of the people has been a gradual change toward economies that must necessarily develop as we take a stand in the world's uplift. Ultimately it must be the survival of the fittest. A nation's industries must be those for which it is particularly adapted, they must be conducted in the most economical manner, and facilities for vending and transporting their products must be on an equally economical basis. For products of equal quality, those having the lowest unit costs will naturally maintain commercial and industrial supremacy.

National resources have no commercial nor financial value when dormant There is no value in any natural resource until labor has been expended in its conversion to the use of man. That nation delivering its converted natural resources in the minimum time with least expenditure of human energy will lead the industry and commerce of the world. This means a most comprehensive national policy in organization—legislative, banking, business, agricultural, transportation, mining and manufacturing. As the value does not appear until labor is applied to nature's labyrinth of wealth, it is incumbent that the most careful study be given to labor requirements and performance.

Our Impending Labor Shortage

Labor dilution should include the questions of the functionalizing of the work of the skilled operative for the less skilled, the eliminating of all work except that necessary to produce the results, and the economizing necessities. The conditions confronting us at the present time will confront us with still greater force during the period of adjustment to peace conditions. They can be summarized as follows:

The equipment and physical condition of our transportation facilities are not kept up to the pre-war standard. This will be cumulative and necessitate a large force of labor to restore the pre-war condition of efficiency.

Agricultural industries suffer for the lack of labor and intensified productivity of soil.

Our roads and highways are rapidly deteriorating by the lack of man power to construct new and repair the old roads.

The development of public utilities is practically at a standstill.

Irrigation projects are practically stopped.

The manufacture of munitions, when abandoned, will scrap an immense amount of machinery. This must be replaced by new.

Building operations other than those for immediate war needs have practically ceased.

The output of our steel mills was practically absorbed by the Government for war work.

Immigration has practically ceased.

The birth rate will supply but a small per cent of the man power needed.

From the above items it can be fully appreciated that the accumulation of work to be performed is stupendous. If our present methods continue the great problem will be to obtain labor. Without being pessimistic, it would seem fair that the facts should be faced and preparation made along the lines of labor dilution to cope with the situation.

The seriousness of the situation can be realized by quoting a few statistics: The high tide of immigration to this country was reached in 1913 and 1914, during which period 1,300,000 immigrants came to this country, of which it can be assumed that 900,000 to 1,000,000 were males of workable age. Of this number, 23 per cent came from Austria-Hungary, 23 per cent from Italy, 21 per cent from Russia, 8 per cent from Canada, 6 per cent from England, 3 per cent from Germany,

3½ per cent from the Scandinavian Peninsula, making a total of 86½ per cent. The remaining 13½ per cent came from all the other countries of the world. It is interesting to know that less than 17/100 of 1 per cent came from Holland, France and Switzerland.

Immigration at a Standstill

From 1914 to 1917 over 800,000 immigrants came to this country, a number materially offset by the return to the colors of many immigrants of the pre-war period. During the year 1918 immigration to this country practically ceased. This country is dependent almost exclusively on immigrants for common labor in mining, agriculture, steel making, road building and the development of public utilities.

We cannot depend on European immigration to this country for this period. The depletion of man power by war losses and the demand for this power in the reconstruction period abroad, combined with the internal development likely in Russia, will mean that emigration from these countries will be prohibited. Of the man power sent by this country to Europe, at least 10 per cent will be incapacitated for strictly laboring work. We will be practically dependent upon native-born Americans based on our population of 1900 to 1905, estimated as ninety to ninety-five millions.

The best available statistics indicate that the average birth rate of this country is twenty-five per thousand population and that the death rate is fifteen per thousand, leaving a net gain of ten persons per thousand. This means that there would come to workable age in the post-war period about 900,000, approximately 400,000 males.

The influence of our educational institutions and personal liberty have probably created in the majority of those coming of workable age a desire for work other than that of the ordinary laborer or mechanic. A review of these figures indicates that careful thought be given to the question of labor dilution as originally applied, and that action be taken upon it at once; and that there be reinforcement of this application by the changing of the mental attitude of the consumer and the manufacturer in favor of the principle that whatever is made or used shall be such that it partake of basic economy rather than of profit.

While the employment of an abnormal number of females as a war measure is right and justifiable, its continuation during the post-war period is problematical from the standpoint of the nation's man power. This brings the subject of labor dilution as a national necessity to a phase much broader in meaning than that originally intended.

Various Phases of the Problem

Labor dilution should not only functionalize the work of the skilled man with that of the less skilled, but it is equally important to eliminate useless labor which, at the present time, is deemed necessary due to habits formed in years of development and peace. Therefore, the problem of labor dilution can best be approached by classifying into the following program:

1. Standardization (Indirect):
   - (a) Legislative methods.
   - (b) Business and financial methods.
   - (c) Transportation methods.
   - (d) Mining and agricultural methods.
   - (e) Manufacturing methods.
2. Co-operation (Indirect):
   - (a) Legislative methods.
   - (b) Capital and labor.
   - (c) Engineering methods.
3. Elimination (Direct):
   - (a) Non-essential statistical work and data.
   - (b) Non-essential office work.
   - (c) Non-essential administrative work.
   - (d) Non-essential sales and advertising work.
   - (e) The idle citizen or loafer.
4. Education (Direct):
   - (a) Of the legislator.
   - (b) Of the business man.
   - (c) Of the engineer.
   - (d) Of the executives.
   - (e) Of the laborer.
5. Occupation (Direct):
   - (a) Analysis.
   - (b) Distribution.
   - (c) Localization.
   - (d) Compensation.

Standardization (Indirect).—While the final effect of standardization on labor dilution is indirect, this is the foundation on which it should be built. The principal divisions are outlined above and will be briefly analyzed.

Removal of "Red Tape"

(a) Legislative Methods.—All laws regarding the conduct of business should be simple and direct and the purpose in view should be the eliminating from the honestly conducted business complications or hardships involving unnecessary expense and red tape; such laws to be drawn up with the hearty and consistent co-operation of the legislator, the business man and the employee, with a view of making them as simple and direct as possible. With fair dealing, there should be no serious difficulty in establishing laws that would be much more simple and uniform than those at present in force.

(b) Business and Financial Methods.—Where there has been rapid growth and an immense volume of business, it has necessarily carried an enormous labyrinth of complication, duplication and detail work which requires a large number of non-producers to care for records necessary to deliver the raw material to the consumer. Standardization would, in a measure, automatically eliminate this labor and reduce the cost of doing business.

(c) Transportation Methods.—The amount of labor involved in the transportation of raw material to the consumer, directly or indirectly, is enormous. By the adoption of standard forms of carriers, and an improvement in the vehicles of transportation, with improved methods of handling materials at the terminals, a great amount of labor would be liberated for other work.

(d) Mining and Agricultural Methods.—The amount of labor on this work could be greatly reduced by the introduction of new and the perfecting of existing machinery. In mining, great progress has been made in the reclaiming of what was once waste ore. Strides have been made in the agricultural field whereby the productivity per acre of ground has been greatly increased. This practice has not been employed in a large

number of the small areas under cultivation. Intensive mining and farming should be given more attention.

Standardization of Production

(e) Manufacturing Methods. — Standardization of production in factories would eliminate surplus materials now carried in stock by the dealers, and would allow of interchangeability of parts that are most essential and enable business to be transacted direct with the consumer. This would reduce the inventory investment of manufacturers and dealers, thereby reducing the number of pieces to be made and the labor applied thereon.

Co-operation (Indirect).—It naturally follows that to obtain the benefits from standardization, co-operation should obtain to the fullest extent; and, by continuous and systematic effort by the legislator, business man, engineer and workman, the essentials under the head of Standardization would begin to produce results.

Elimination (Direct).—The natural result following standardization and co-operation would be elimination, since many employed at the present time would necessarily be transferred to other lines of occupation.

The general headings covering the classes of work eliminated are covered in the preceding classification.

Education (Direct).—Following standardization, co-operation and elimination, there should be a concerted effort to educate to a new epoch of economy. The term education is used for the change from that of extravagance to that of basic economy. It should teach that "Waste makes want, and want makes woe," and that the conservation of our energy and resources is of greater national value than the unlimited accumulation of the dollar.

Finding the Right Job for the Worker

Occupation (Direct).—Last but not least, occupation should be considered in the problem of labor dilution. An era is approaching when the conditions of the present and past will entirely change. This new era involves a wholesale change in the distribution of occupations. That this may be done with the least disturbance, a careful analysis should be made of the adaptability of the individual to the occupation and consideration should be given to the distribution of individuals to such occupations. Coincident with this should follow the locating of industries at such points as insure economic production.

The occupational problem will always lead to differences of opinion, but is governed largely by supply and demand and the standards of living in different communities or nations. The lower the standard of living the lower the compensation for labor. The higher the standard of living the higher is labor compensated. The problem, however, resolves itself into production and delivery to the consumer at the lowest possible cost with a fair profit to the manufactrer.

These are facts showing that "a condition and not a theory" confronts us. To keep in circulation the currency of the world at the present rate it is necessary that public improvements, manufactories, agricultural and mining interests should continue at a rate commensurate with the present circulation of money.

This means a gradual readjustment and the problem should be looked squarely in the face and the way paved for such readjustment with the least possible disturbance. This can only be done by careful planning and action on the part of the country's greatest men to meet the problem of labor dilution in a broad way.

The English, with their customary conciseness, have expressed in the words "labor dilution" that which it would require volumes to describe or discuss. A study of the problem indicates that labor dilution and the engineering of men are practically synonymous, the former involves all that the latter implies.

City Gas Maker Must Aim for Cheaper Selling Price or Lose Out in Industrial Field to Producer Gas

The Isolated Plant for Electricity Supply Using Gas Engine as Generator Driver—Higher Efficiencies Necessary in Gas-Fired Industrial Installations

With its many merits and conveniences electric driving has made steady and persistent headway during recent years and has come to stay, but here again the question of cost will in future have to be taken into account even much more seriously than has been the case hitherto. From this point of view it is advisable to recall the fact that even at pre-war prices there were perhaps only as few towns in the Kingdom as could be counted on the fingers of one's hands where electric current for power purposes could be obtained for 0.5d. per unit, and these mainly were situated in such districts as could utilize "waste heat" from other industrial processes, for example, coke oven and blast furnaces gases. In other districts current for power services was obtainable for rarely less than 1d. per unit (and usually considerably more), a figure which was about equivalent to the total generating cost of current in private plants using gas engines served by gas producers. Further, it is advisable to recall that by those gas undertakings possessing powers under the Board of Trade to give public service of electricity, it has been generally considered that gas (say 500 B.t.u.) at a cost of 12d. per thousand put into the holders on the works enabled them to obtain sufficiently low working and distribution costs to build up an increasing business at dividend-earning rates comparable with those in other districts. If, therefore, gas could be put into the holder at less than 12d., it will be seen that private electricity plants in industrial works could well be supplied with gas at such a figure as would open out a huge field for future development.

Gas Engines of the Future

The effect of the war upon engineering generally and internal combustion engineering particularly has been all too little appreciated, for obvious reasons. But it may be said that types have been developed which prove that the gas engine of the pre-war type will certainly undergo considerable constructural development. Higher piston speeds will prevail, and this will mean increased power per unit of cylinder measurement, approaching 50 per cent. Hitherto the weight of reciprocating masses has been such that a piston speed of, say, 800 ft. per minute was considered the limit. By the experience gained in aviation, in automobilism and in "tanks,"

it has been found possible to obtain with perfect safety piston speeds of 1,200 per minute, and this, be it remembered, in engines upon which have depended many of the successes of the war, and upon the continual operation of which has depended the lives of the gallant men of our air and tank forces. The future of gas power, therefore, may be considered, from a mechanical standpoint, well assured.

Competition with the electric motor in small factories will no doubt cease. Why trouble about small individual applications in which power transmission counts more than power generation? The electric motor is not a power generator, and the competition of the future will no doubt be restricted to cases of units of moderate size in which the cost of power is of greater concern than is the case when the total saving can be measured only in terms of a few sovereigns per annum. There is a much better business proposition for all concerned when both electric power and lighting in works and factories can be generated by a gas engine for less than the cost of the public electric supply, which, with all its deadweight capital charges, generating and distributing costs, even with low steam costs, will not be sold at much less than 1d. per unit, as far as one can at present see.

Electric Super-stations

One has heard a great deal about super-power stations and bulk electricity supplies. It is incumbent upon the gas engineer to push ahead and encourage individual users to put down private electricity stations. This is the true solution of the coal conservation problem in respect of moderate size factory requirements. Gas engineers will be doing their country true service in forging ahead on these lines and so cutting the ground away from the quasi technical-political machinations of those who propose to conserve coal by erecting sufficiently large power stations as would enable the consumption per unit generated to be cut down to a low figure (which can in fact now readily be gained by the smallest gas-electric set) and by disregarding the valuable tar oils and ammoniacal liquors which gas engineers obtain from coal. Let electric power and lighting come by all means, but gas engineers must themselves see to it that the generating set is driven by the gas produced from coal and not by the coal itself. It is idle to argue about this with dogmatists. Let us get to work, and remember that the future is to the men who make the future.

Industrial Heating

Many applications of gas furnaces have been made throughout the country for all kinds of operations in munition works. The conveniences and adaptability of the gas-fired furnace have been strikingly demonstrated, and there is no doubt that the future will see yet greater advances in this direction. But here, again, the question of cost of gas comes directly into view. During the years of war prices have been quite a secondary consideration. With the coming of peace commercial competition will force each manufacturer to ask himself whether each item of working cost can be reduced, and this will thus bring under review the relative merits of producer and town gas for firing furnaces. The difficulties of obtaining steel plates has prevented such comparisons being already instituted, but with the ability of producer makers to get going again on this class of work the rival claims will be pressed. Seeing that in a furnace a low-grade gas will give equally high temperatures as a high-grade gas, the decision of the user will be influenced by the relative cost. Can it be doubted, therefore, what the policy of the gas engineer must be? He must set to work to make a gas that will enable him to sell it at a price which will be sufficiently attractive to the furnace user.

As to the furnaces themselves, it may be expected that the future will bring with it very considerable improvements in design. It can hardly be said that perfection has been nearly approached when the proportion of heat transmitted to the metal melted to the heat in the gas consumed is of the low order that now obtains. Much research work remains to be done before the direction in which better performances are to be obtained can be definitely known, but so far as present knowledge goes it would appear that to gain higher efficiencies a better use of flame contact is essential. This involves the discovery of a material which will enable refractory linings to stand up to the work in a more efficient manner than at present. Heat radiation from incandescent surfaces is apparently a matter which has a direct influence upon furnace efficiencies, and there is little doubt that future progress will depend upon the amount of attention paid to the scientific side of phenomena which at present are but little understood.—*Gas World.*

Publications

Water Gas Manufacture with Central District Bituminous Coal as Generator Fuel

Co-operative Mining Series Bulletin No. 22 of the Illinois State Geological Survey. Paper backs; 9 x 6 in.; 24 pages; illustrations from maps. Authors, W. W. Odell and W. A. Dunkley. Obtainable from the Gas Section, Illinois Mining Investigations, 305 Ceramics Building, Urbana, Ill.

That central district bituminous coals can be successfully used as generator fuel in the manufacture of water gas, and that for the purpose of bringing about a reduction in freight traffic as well as the release of additional coke for use in more essential ways, it is desirable to substitute these coals for eastern coal and coke wherever possible, is the objective striven for and satisfactorily attained in this pamphlet. The authors, who represent the United States Bureau of Mines and the Illinois State Geological Survey respectively, make out a very fair case indeed for the substitutions advocated, and treat briefly but thoroughly of general practice thus far developed which would seem to warrant the conclusion that a permanent market for central district coals in their new role may be established as time goes on.

The report outlines the difficulties which were anticipated, together with those actually met and overcome in connection with the change of fuel. The principal objections in the minds of most operators contemplating the substitution are (1) the coking or matting together of the fresh coal in the generator, (2) the possibility of creating a "smoke nuisance" because of

the large amount of volatile matter which is released when fresh coal is charged into the generator and (3) that the operation of the hot valves will be impeded by the tar present in the gases given off by the generator.

To overcome this caking difficulty, we learn that "coal must be charged into the generator in much smaller quantities by volume than coke," since the former is heavier per unit of volume. Of the second difficulty, wherein the appearance of unconsumed members of the hydrocarbon family in certain localities made the plant a target for many charges of legal buckshot, the authors hasten to inform us that "it is very difficult to avoid smoke or oil fumes at all times even with coke fuel." One ingenious operator, however, hastened the ignition "by means of an automobile spark plug screwed into a short length of pipe extending above the carburetor." With this device he was "able to ignite the gases . . . long before the bricks would become hot enough to ignite them." Other operators, in order to reduce the smoke formed after coaling the machine, are reported to blast before coaling and make a steam run before blasting again.

The increase of tar formed with coal as a generator, estimated to be on an average 25 per cent more than with coke, "need not cause any serious trouble," though most operators take precautionary measures. According to our informants, distillate or paraffin oil is sometimes poured down the stem of the hot valve after completing the day's run, which treatment softens the tar. The tar trouble may also be diminished, the authors state, "by tapping a hole in the valve bonnet and pouring a little lubricating oil into the valve through this opening twice a day."

In the general discussion dealing with the principal points in operating practice which seem essential to success, the following "variables" are taken up in detail: (1) kind and size of fuel; (2) depth of fuel bed and its relation to blast and steam cycle; (3) quality and quantity of oil used; (4) distribution of oil in the boiler; (5) temperature maintained in the carburetor and in the superheater, and (6) purging the machine with air. Operating data from four typical plants where coal was used as generator fuel are given in the form of a table accompanied by an exhaustive discussion, while approximate cost data revealing, in a typical case, the saving by this means of $0.059 per 1,000 cu. ft. of gas made, features the summary. All together, the proposal presented appears to be worthy the consideration of water gas operators located in the middle west.

Measuring the Temperature of Gases in Boiler Settings

Bulletin No. 145 of the U. S. Bureau of Mines. Flexible backs; 9 x 5¾ in.; 66 pages; illustrated. Authors, Henry Kreisinger and J. F. Barkley. Obtainable from U. S. Bureau of Mines, Department of the Interior, Washington, D. C.

This book is one of a series of publications being issued by the Bureau of Mines for the purpose of disseminating information in regard to the methods by which the fuels in this country may be used most efficiently. A knowledge of the temperature of the gases in boiler settings and in other commercial apparatus using heat tends to develop improved designs of apparatus and better methods of operation, thus reducing waste of fuel. The pages present, for the benefit of those designing, operating, and testing such apparatus, information as to the accuracy of temperature measurements made under certain conditions and the corrections that can be safely applied.

Lead and Zinc in 1918

The domestic mine output of lead and zinc decreased in 1918, according to C. E. Siebenthal in a statement just issued by the U. S. Geological Survey, Department of the Interior. The lead and the recoverable zinc of ores mined was approximately 563,000 tons and 627,000 tons, as compared with 651,156 tons and 711,192 tons in 1917. The refined lead output of smelters and refineries was 645,000 tons, against 612,214 tons in 1917, and the antimonial lead output was 22,000 tons, as against 18,647 tons. The lead available in the United States is 540,000 tons, against 515,258 tons in 1917. The output of spelter from domestic and foreign ore was 525,600 tons, compared with 669,573 tons in 1917. Spelter from foreign ore decreased to 23,300 from 84,976 tons in 1917. The apparent domestic consumption of spelter was 440,000 tons, compared with 413,984 tons in 1917. The consumption figures of both lead and zinc include the metal shipped abroad for use of the American Expeditionary Forces. The average price of lead at New York was 7.6 cents a pound and of spelter at St. Louis 8 cents a pound.

Correspondence

31,000 Cubic Feet of Gas Per Ton of Coal Carbonized

Sir: It was with great interest that I read Norton H. Humphrey's article in the Sept. 21 issue of your journal. The subject treated is of more than passing interest to me, as I have been steaming vertical retorts here in Pernambuco for nearly two years with most excellent results.

In an article written by me on the subject and published in the Jan. 26 number of your journal we boasted a make of over 27,000 cu. ft. of 436 B.t.u. gas per ton of coal. Somewhat later, working under improved conditions and with Arley coal, we produced as much as 31,000 cu. ft. of 440 B.t.u. gas, or a total of 13,600,000 B.t.u. per ton of coal, with a retort temperature of only 1,100 deg. Cent. These figures, taken as the average of several months' normal retort house performance, were derived as total heat values. I presume that Mr. Humphrey's figures are also given on the same basis or in gross calorific units.

Recently, with a mixture of Kanawha (American) and Lancashire (English) coals we have fallen somewhat below this figure, and can only show a production of 27,200 cu. ft. of 445 B.t.u. gas per ton of coal, or a total of 12,100,000 B.t.u.'s per ton.

There is nothing unusual about these figures except that they show the extent to which this process can be carried if necessary. Many are the theories that have been presented so far, but there is undoubtedly still much positive information to be acquired on the subject.

HENRY M BALSAM,
Pernambuco Tramways & Power Company, Ltd.,
Pernambuco, Brazil.

Emphasizes Fuel Conservation in Advertising Heaters During Christmas Holidays

The Citizens Gas Company, of Indianapolis, took advantage of the Christmas holidays to emphasize the need of fuel conservation in a new way. It advertised widely the new Radiant Fire Heaters, as the "most efficient and most economical gas heating device on the market." The company allowed a refund on an exchange of old heaters for the more economical new ones.

Incidentally the advertising did a world of good for the gas appliance business generally. One of the big ads is reproduced elsewhere on this page.

The Latest Ad Style with a Punch

By I. R. Merritt

The effective use of white space is the target sought by every gas company. Some hit wide of the bullseye, but the company that is a fairly efficient marksman as an advertising writer manages to just miss the inner circle by the merest fraction of an inch.

The effective use of white space is determined by many considerations, not the least of which is that of the goods offered for sale. The gas company is advised not to crowd their ads with reading matter, so they eliminate a sentence here, a word there, until all that remains is a mere skeleton of his first draft. Editing is an art acquired only by years of skill and practice, with the frequent result that the punch is destroyed in the cutting.

The newspaper columnist, in his never-ceasing search for something new, has invented the story which is told in three or four words to the line, punctuated chiefly by capital words. Its vogue has now extended to the magazines, and the stunt is becoming so general that no one thinks to extend apologies to the columnist who originated it on a New York daily.

If the newspaper columnist can get such excellent results within the narrow, single-column gauge of a newspaper, the advertiser, with several newspaper columns at his disposal, not necessarily extending from the top to the bottom of the column, should be able to make the white space return big dividends. It gives the advertiser sufficient words in which to present his story in the choppy style peculiar to this form of writing, besides allowing him to regard the white space requirements.

A gas company recently ran such an ad beginning from the top of the first column and extending to the bottom of the second column:

"THE DAY WE put
THOSE gas logs

(*Continued on page* 12.)

Gas Conservation
Wonderful New Discovery in House Heating
RADIANT HEAT ON TAP LIKE HOT WATER
YOU LIGHT THE GAS AND ARE WARM INSTANTLY
Radiant Fire Heaters
Most Efficient and Most Economical Gas Heating Devices on the Market
Complete Combustion—Absolutely Odorless
We want to help our gas consumers to conserve gas and are, therefore, offering these efficient heaters as a substitute for older and wasteful appliances.
Not for sale except to displace old heaters. $5.00 allowed for any old heater replaced by a Radiant Fire.
Call at our showroom and see this wonderful new heater in operation.
Citizens Gas Company

AMERICAN GAS ENGINEERING JOURNAL

SIXTIETH YEAR

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Contents of This Issue

GETTING READY FOR THE GAS INDUSTRY OF TOMORROW BY EDWIN DEAN 1

LABOR DILUTION A NATIONAL NECESSITY 3

CITY GAS MAKER MUST AIM FOR CHEAPER SELLING PRICE OR LOSE OUT IN INDUSTRIAL FIELD TO PRODUCER GAS 5

PUBLICATIONS 6
Water Gas Manufacture With Central District Bituminous Coal as Generator Fuel.
Measuring the Temperature of Gases in Boiler Settings.

CORRESPONDENCE 7
31,000 Cubic Feet of Gas Per Ton of Coal Carbonized.

MERCHANDISING GAS 8

EDITORIALS 9

HOW THE GAS COMPANIES ARE HELPING THE NATION 11

NEWS OF THE GAS INDUSTRY 13

PERSONAL NOTES 18

SOCIETIES AND ASSOCIATIONS 19

CONSTRUCTION NOTES 19

As the Journal Views It

A Light that Had Become Imperative

In devising and developing commercially its new "Thrift" burner, which is described elsewhere in this issue, the Welsbach Company has performed a service to the gas industry that should be doubly appreciated in that, in introducing it, the company must of necessity be sacrificing its own inclinations to the immediate and pressing interests of the gas industry.

The work of the reputable manufacturers of gas lighting equipment has up to this time been directed mainly towards increased efficiency, increased convenience and increased attractiveness. Low cost of equipment has been, of course, a desideratum, but low cost has been held secondary to the considerations enumerated.

The new "Thrift" mantle, while exceedingly efficient as compared to the open flame, cannot, of course, be compared in efficiency to the company's more expensive lamps wherein efficiency has been made a primary object. The "Thrift" mantle is in actuality a life preserver tossed into the high seas to save gas lighting as a considerable business from what up to its advent has seemed inevitable doom.

With the light oils in gas being recovered to the degree they have been, with the heat unit standard becoming general, gas lighting with open flames has become practically impossible. There was a remedy for open-flame users in the mantle lamp, but the rela-

tively expensive mantle lamp hitherto available was financially impossible to many of them.

The average home requires many lamps. Their aggregate cost summed up to more than the average consumer could meet. The new light brings the cost of mantle lamps within their reach.

Without it they would have had to get along as best they could, wasting money every hour of darkness and becoming more thoroughly disgusted with gas lighting all the while, pending the day when they could scrape enough money together to put in electricity.

How Topeka Avoids Meter Reading Controversies

Had we been acquainted with the method practised in Topeka, Kan., to avoid meter-reading controversies previous to the publication of the editorial on "A Right Way and a Wrong Way to Handle Meter Reading Complaints" in the issue of Dec. 21, 1918, we think we might have been tempted therein to include in plain letters, "Topeka Excepted."

L. G. Treleaven, the receiver for the Consumers Light, Heat & Power Company of that city, believed firmly that if the consumer could be induced to read his own meter all meter-reading controversies could be avoided. He despaired, however, of getting him to do so directly.

There is a substantial reason for the consumer's inclination in this respect. He is convinced in his own mind that meter reading is a technical matter and requires a knowledge that he does not possess and cannot easily acquire. We assure him it is a simple matter, but, when we seek to demonstrate, our teachings do not confirm our statement. The details we explain do not penetrate easily into his mind. When one is convinced in advance that he cannot learn something, he is a mighty hard pupil to teach.

Mr. Treleaven recognized this fact and adopted a less direct means of attaining the same end. The accompanying illustration is a reproduction of a card his company sends to its consumers.

Read this card carefully. It is worth while.

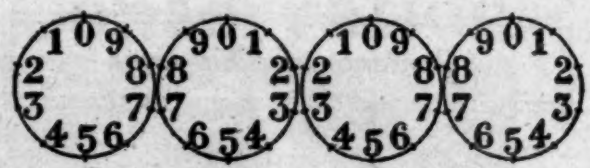
In our view it is about as effective a bit of English as we have encountered. It is manifestly the output of a skilled writer; one who, consciously or unconsciously, puts the sentence first that should be first and whose argument is so phrased that there can be no offense and no rebuttal.

At the start-off there is a tacit admission that there can be error in the company's reading, and the purport of the card is fully made clear. Before the first paragraph ends there is a delicately expressed confidence in the consumer that cannot but powerfully influence him towards good-will to the company. It is not a re-examination of the meter that the company wants previous to correction in the bill. It is simply the consumer's marking. By implication the company stamps him as honest.

The second paragraph makes clear what should be self-evident, but which some gas companies and numerous consumers unfortunately do not always remember. "There can be no argument." Either the meter registers a certain figure, or it does not. This figure in itself is the whole answer. If it is less than the gas company has billed, the company's billing is in error. If it is not, the consumer has used the gas. Meters are faulty too infrequently for this feature to have any general bearing whatever.

The third paragraph is almost entirely in reiteration. The fallibility of the company and the company's man is more clearly acknowledged. The company's confidence in the honesty of the consumer is emphasized.

The whole text is brief in the extreme. It requires just thirty seconds of the consumer's time to read it and understand what is wanted. The task required will appeal to him as simple. When the company's



If you have any reason to question the correctness of your bill just mark on the above diagram the exact present position of the hands on your meter dial and bring it to us. If your markings show that an error has been made we will be very glad to correct your bill accordingly. **That's fair enough, isn't it?**

Whether your bill is correct or incorrect is not a question of **argument** at all, and all the argument in the world will not change the amount; but it is a question of **fact,** and that fact is whether or not the meter was read correctly.

Our man has read your meter and we have made your bill according to his reading. However, he is only human and he may have made a mistake. If you think that he has we will gladly accept your own reading, so please mark the diagram as above requested and return it to us.

interpretation of the reading comes back to him he will, without realizing it, have gotten a lesson in meter reading.

By an efficient use of the printed word the Topeka company bids fair to reap aplenty in good-will, confidence and co-operation from its thirty-second address. Its practice should afford a good example to others in avoiding the wrong way to handle meter-reading complaints and in formulating the right way.

If It's Worth Anything to Him in the Way of Advertising He Is Entitled to It

Most everybody nowadays is discussing how to handle labor. Occasionally someone utters something that goes deeper than mere vapor; that talks plain sense. A number of prominent men have made public their industrial creeds. Here is a creed, published as an advertisement, that appeals to us:

We are "Slow Old Farmers" and we don't want millions.

We know some folks who have millions.

We have solved the problem of life.

We have done it with our ——— ——— patents.

We are located here at ———, out in the country. Over that north hill lies Valley Forge. Down the Brandywine is Chadd's Ford, and its rich meadows flowing with butter and cottage cheese.

Our men are farmers' boys, and most of them drive into work from their little farms.

We never have any labor troubles, because we live right here with our "boys" and we are chums.

We **build** elevators. We don't manufacture them. Not how cheap we can get them out, but **how good**.

We have no salesmen, no sales agencies.

We are just **"Slow Old Farmers,"** doing business in old-fashioned ways.

That is why ——— elevators, like Chippendale, Sheraton and Adams furniture,

Are so everlastingly good.

We have selected this for republication, not to advertise the manufacturer who produced it but because it is the best essay on industrial management in the fewest words we have ever encountered. Consequently we have carefully expurgated every word that would seem to identify its source.

A decade ago these people were old fogies in their manner of doing business. They tried to run an industrial plant with a conscience, with a sense of partnership towards their workers, and pride themselves on the quality of their product rather than quantity and turnover. They were even guilty of losing orders because of such impractical conduct as declining to keep an appointment that would necessitate traveling on Sunday.

To-day, because they have continued behind the times, they are many, many strides ahead.

All captains of industry cannot take their plants and appurtenances to the country within reach of "rich meadows flowing with butter and cottage cheese," but they can readjust their minds to thoughts of simple good-will towards their employees and their customers—to plain, open, honest frankness in thought and deed—and thereby prepare themselves to do business in the only manner in which business can be done successfully in the future.

Your employee does not seek to plunder you of your capital. He does not want exorbitant wages. What is yours he respects. What should be his he will want.

He does not want paternalism. He wants friendship, helpfulness and respect.

He does not want charity. He wants what his work is worth.

Give him these, and you have gone far towards solving your labor problem.

How the Gas Companies Are Helping the Nation

GEORGE L. BURDICK, of Scranton, Pa., has been made a second lieutenant of aviation over in France. Mr. Burdick was formerly with the Scranton Electric Company and the Scranton Gas & Water Company and joined the aviation forces of the Government early in the war. He had a long training in Texas and took up the work with the greatest enthusiasm. He went to France early last spring.

JAMES JOSEPH COLE, Rutherford gas distribution shop of the Public Service Gas Company of New Jersey, is a seaman on the U. S. S. Corona.

THE SUBURBAN GAS COMPANY, serving Revere, Mass., subscribed for $25,000 in Fourth Liberty Loan Bonds for credit in the Revere quota.

THE KINGS COUNTY LIGHTING COMPANY has fifty-eight stars in its service flag. More than forty of these men are now on the other side and, according to reports, are in every branch of the service. Three women also have joined the United States Navy. Added to the flag recently also is a gold star for Richard E. Funk, who was killed at Chateau Thierry when the Allies began the big push. Funk had been employed by the company for several years but enlisted over a year ago and arrived on the other side last February. Funk was the third man from the company who made the supreme sacrifice.

The Latest Ad Style with a Punch

(*Continued from page 8.*)

IN OUR show window
A LADY came in
TO LOOK at them
AND WE SHOWED her
HOW cheerful and inviting
THE PARLOR is
WITH A gas log.
TO-DAY SHE tells me
FRIEND HUSBAND
now
STAYS IN NIGHTS."

ADVERTISING YOUR WINDOW DISPLAYS

Do you get people in the habit of watching for your window displays? It is a habit which people will cultivate if you make your window displays attractive. Take space in the newspapers to praise up your window displays sky-high, but see that the windows live up to your claims. Your window displays may speak for themselves, but there is nothing like advertising the fact for the benefit of all and sundry, especially if you are hemmed in with several other merchants whose windows are of the hodge-podge variety. Your window, once a person's attention is called to it, will stand out from the rest as a rose does from a weed. But it pays to direct attention to your window displays because the people may have gotten in the habit of skipping your block because they have to pass a number of bad and indifferent windows before they come to yours. This is the way Austin's, Tupper Lake, N. Y., did it.

"NOW I don't like
TO BE too personal,
BUT I saw you
THE OTHER day,
WHEN YOU stood
LOOKING at our window,
AND THERE was something
IN THE EXPRESSION
ON YOUR face
THAT SAID you thought
THE DISPLAY was pretty,
AND THAT was enough
TO MAKE me feel
WELL PAID
FOR ALL the work
OF PUTTING in
THAT WINDOW display.
AND NOW right here,
WHILE WE'RE talking
ABOUT it,
I WANT to suggest
THAT IT MIGHT pay you
TO STOP OFTEN and look
AT OUR window,
BECAUSE every week
WE PUT in something
THAT IS WORTH while
LOOKING at.
AND EVEN if you
DON'T NEED IT just then,
WHEN YOU do
COME TO need it,
YOU'LL remember
THAT YOU saw it
IN OUR window,
AND YOU'LL know
RIGHT WHERE to come
AND GET it.
NOW ISN'T that
SOME idea?
ANOTHER spasm
NEXT WEEK."

It is the catchy advertisement that attracts the attention and then holds it—and what more catching can be imagined than an advertiser who tells his story in the latest popular style? Besides this you have sufficient words in which to present your message, leaving the right amount of white space to balance the whole.

Boston Consolidated Contract with New England Fuel Terminated with End of War—New Contract Entered Into

The Boston Consolidated Gas Company has submitted to the Massachusetts Gas & Electric Commission a copy of a new contract entered into with New England Fuel & Transportation Company, whereby the new price to be charged will be 39.5 cents per 1,000 cu. ft. This new contract takes the place of the one entered into between both parties on Sept. 27, 1917, which was to continue until the termination of the European war, or as long as the New England Transportation Company was engaged in the manufacture of toluol for the Government. The new rate is effective from Dec. 15.

Refund Ordered by Commission Due to Low Pressure During December and January of Last Winter

Approximately $30,000 will be refunded to patrons of the Oklahoma Gas & Electric Company on their gas bills for December, 1917, and January, 1918, when the gas supply failed in zero weather as a result of a recent supreme court opinion, which upholds the right of the commission to order refunds when gas service is below the maximum of efficiency.

Refunds ordered at El Reno, Muskogee and in other places where gas shortages occurred, and which have been held up pending the decision of the supreme court, aggregate more than $100,000, according to the estimates of corporation commission attaches.

Unless the supreme court grants a rehearing, which it is understood gas company attorneys will ask in view of the far-reaching effect of the decision on State control of gas companies, the making of the refund should be in progress within the next thirty days, it is said.

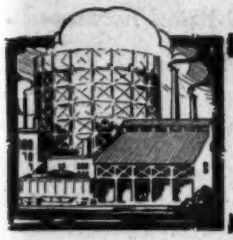
The ruling of the court, given in the case of the appeal of the Nowata County Gas Company from the order of the commission directing a discount of 16 per cent on gas bills for the month of December, 1917, and 17½ per cent on January, 1918, bills, and which upholds the authority of the commission to do this.

Southern Counties Company Wants to Buy Ontario Uplands Gas Company Properties

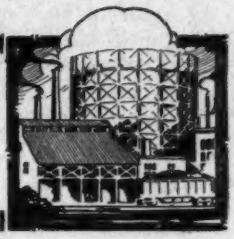
Also Wants to Issue Bonds

The Southern Counties Gas Company has filed with the Railroad Commission an amended application for permission to purchase the properties of the Ontario-Uplands Gas Company, the amended petition covering extensions and betterments made by the Ontario company since September, 1917. The company also asks permission to issue and sell $108,000 par value of its bonds at a price not less than 82 accrued interest, for the purpose of reimbursing its treasury.

The Southern company has also filed with the commission an application to issue $360,000 par value of its bonds at not less than 82 plus accrued interest, and also for permission to issue its bonds secured by its trust deed of May 1, 1916, to the amount of $160,000 for the purpose of providing funds to reimburse the company for 80 per cent of the cost of permanent extensions and betterments. In a financial statement filed with the petition, the company reports its net earnings for the year ending Nov. 30, 1918, at $411,762.80.



NEWS OF THE GAS INDUSTRY



Two Springfield Utilities Want to Consolidate and Issue Bonds

The Southern Illinois Gas Company and the Murphysboro Waterworks, Electric & Gas Light Company, recently filed a joint application for permission to consolidate and to issue bonds and capital stock.

Colonel Byllesby Returns from Europe

Lieutenant Colonel H. M. Byllesby returned from overseas duties with the American Expeditionary Forces, arriving on the Caronia Tuesday, Dec. 17. Since early in the year he served as London representative of the Purchasing Board for the United States Army in Europe. He has received his honorable discharge from the army and rejoined H. M. Byllesby Company Dec. 23.

Free Night School Opened in St. Louis Jan. 3

Course Consists of Fifteen Lectures—Plant Problems Confronting Students Will Be Taken Up

A free night school for practical and student safety engineers will be opened Jan. 3 by the Safety Council of the St. Louis Chamber of Commerce under the direction of Carl L. Smith, secretary of the Central Mississippi Valley Division of the National Safety Council.

The course will consist of fifteen lectures, by men who have charge of safety work at some of the biggest industrial plants in the country. Between lectures Mr. Smith will advise members of the class regarding any problems that may present themselves at the plants from which they come. Each plant in the district will be given the privilege of sending one or more men to the school.

Among the subjects that will be discussed are the following:—

1. "The Importance of the Manager's Co-operation in Promoting Safety."
2. "Design and Construction of Safeguards."
3. "Plant Conditions—Arrangement, Order, Lighting."
4. "What the Foreman Can Do to Promote Safety."
5. "Bulletin Boards, and Other Ways of Reaching the Workmen."
6. "Workmen's Inspection Committees and Meetings."
7. Electrical Hazards."
8. "Eye Protection and Safe Clothing."
9. "First Aid."
10. "Labor Management and Safety—Physical Examinations, Instruction of New Men, Labor Turnover."
11. "Plant Sanitation."
12. "Accident Records, How to Compile and Use Them."
13. "Fire Prevention in Relation to Safety."
14. "Qualifications of a Safety Engineer, His Duties and Opportunities."
15. "General Review and Experience."

Impossible to Improve Service Claims St. Clair County Company

Belleville Council Threatens to Ask for Injunction Restraining Company from Collecting January Bills

The St. Clair County Gas & Electric Company has notified its gas consumers at Belleville, Ill., that it will be impossible to improve the service because of the low pressure resulting from the poor yield of the natural gas wells used by the company. These wells, which are near Staunton, Ill., have recently fallen far below expectations.

The company has asked domestic consumers to discontinue the use of gas for heating purposes, and industrial consumers have been requested not to burn gas during certain hours.

As a result of these developments the City Council of Belleville again threatens to ask for an injunction to restrain the gas company from collecting its January bills.

Missouri Public Service Commission Has Right to Regulate Rates—Decision of Supreme Court

The Missouri Public Service Commission, and not the various municipalities of that State, has the right to regulate the rates charged by public utilities, according to a decision rendered by the Missouri Supreme Court recently in the case of the City of St. Louis' appeal from the decision of the Public Service Commission authorizing the United Railways to increase its fare from five to six cents.

Though given in the case of a railway company the decision is applicable to public utilities of any sort and is of prime importance to the gas utilities of Missouri, in view of the fact that in many instances municipalities have attempted to regulate the rates charged by gas utilities. The greatest significance of the decision lies in the fact that it gives to the Public Service Commission the power to regulate rates even in cases where a municipality in extending a franchise to a public utility enters into a contract regarding rates.

The Supreme Court decision which was handed down at Jefferson City, Mo., Dec. 19, by Justice Woodson, reversed a decision made early in September by Judge Slate, of the Cole County, Missouri, Circuit Court, which said the Public Service Commission had no authority to order a six cent street car fare.

Justice Woodson, in his opinion, holds that it was within the police powers of the legislature to give the Public Service Commission the right to raise, lower or regulate the rates charged by public service corporations, and that even though the rate or fare fixed in a franchise agreement should be in the nature of a contract, this right wouuld still exist if public policy should demand its exercise.

The city's appeal from the Public Service Commission's decision was

based on section 20, article 12 of the State Constitution, which prohibits the Legislature from granting the right to construct and operate a street railroad in any city without first acquiring the consent of the local authorities. It was argued by the city that the constitutional right to grant or withhold permission to use the streets also involved the right to contract with the street railway company as to the amount of fare which should be charged.

It was held by the Supreme Court that this right not inherent in the constitutional clause under consideration, but that such an agreement as to fare rates was permitted by the constitutional only in the sense that the constitution did not forbid it.

Under the common law, the decision said, the city in granting a franchise had a right to make any regulations ti saw fit to make with the company, but under the same common law, in the absence of an express prohibition in the Constitution, there is nothing which would have prevented the Legislature from fixing the fares, had it seen fit to do so. The court holds that as the Legislature had that power, whether it exercised it or not, at the time the franchise was granted, it now has the power to delegate the fixing and regulation of rates to the State ublic Service Commission.

Taking up the point as to whether a fare rate agreement between a city and public service corporation was a contract which could not be violated, the opinion says that at all times the Legislature had the undoubted authority, under the police powers of the State, to increase or decrease fares as it deemed proper, or to delegate that power to a public service commission.

Defense of Acts of Missouri Commission Issued by Chairman

Frequently Used Powers to Reduce Rates and Must of Necessity Exercise Power to Raise Rates

A defense of the acts of the Missouri Public Service Commission covering 18 typewritten pages in the form of a preamble to the forthcoming annual report of the commission, was issued last week by W. G. Busby, chairman of the commission. The statement was issued as a reply to the attack made on the commission at the recent conference of Missouri mayors in Kansas City.

The conference of mayors pledged itself to work for an amendment of the Missouri statutes such as would deprive the State commission of the power to regulate rates charged by public utilities. Chairman Busby, in his statement, makes a plea for even greater powers on behalf of the commission.

The principal charge made against the commission by the conference of mayors was that it had permitted too many utilities to increase their rates. To this charge Chairman Busby replies:

"The increases granted during the war were only such as to enable the utilities to live and render necessary service, and have been put in for temporary periods only. . . . Prior to the time the United States declared war on Germany the cost of materials and labor had been steadily increasing, and after the declaration of war the cost of materials, labor and money so quickly increased that many of the public utilities of the State faced bankruptcy and receivership, with entire abandonment or material reduction of their service unless immediate relief should be granted in the way of increased rates for their service."

Chairman Busby directs attention to the suggestion of President Wilson and Secretary of Treasury McAdoo that state commissions treat utilities fairly and keep them at their maximum efficiency during the war. The statement continues:

"The commission has also frequently used its powers to reduce the rates of utilities, and if it exercises its powers to reduce it must of necessity exercise its power to raise rates whenever necessary, as otherwise regulation would be unfair and a failure."

Discussing the proposals for the reduction of the powers of the State commission Chairman Busby says the "State would take a distinctly backward step should the legislature now fail to fully support the commission. Instead of impairing the act or powers of the commission, there should be every disposition at this time especially to aid and strengthen the commission."

THE OKLAHOMA NATURAL GAS COMPANY has declared the usual quarterly dividend of 2 per cent payable Jan. 20 to holders of record Jan. 3.

Pocatello Rates Increased

A recent ruling of the Idaho public utilities commission grants the Pocatello (Idaho) Gas Company a flat increase in its rates of 45 cents per 1,000 ft. The new rate was effective Dec. 1. The company is ordered to file with the commission a new tariff sheet and schedule showing such rates.

This is the substance of a decision made by the utilities commission after considering the various points at issue on the application of the company, as made on April 20 of this year. The company applied for a considerable raise in the rates, and a "service charge of 25 cents per month." The last item is denied by the commission.

The company applied for the increase in rates on the basis of increased cost of production and general advance caused by war conditions. Statements were submitted purporting to show loss in operation, estimated during the year 1918. The company claimed a net profit in 1916 of $7,787.59, but cites the net profit for 1917 was but $160.09.

The new rates being:

First 5,000 cu. ft. per month per 1,000 cu. ft., $2; next 5,000, $1.90; next 10,000, $1.75; next 30,000, $1.55; all over 50,000, $1.45.

All consumers using gas through prepay meters shall pay $2 per 1,000 cu. ft., at which the prepay meters will be set. Minimum monthly charge $1. A discount of 10 cents per 1,000 cu. ft. will be allowed for payment of account on or before the 10th day of month following which service has been rendered.

Increase Asked for Coast Counties Company

The Coast Counties Gas & Electric Company, which serves Santa Cruz, Watsonville, Hollister and Gilroy, Cal., applied to the Railroad Commission recently for authority to add a surcharge to its present gas rates on the grounds that increased costs of operation threaten to impair it financially unless immediate relief is granted. The cost increase complained of is in the present prices of oil and labor. Last April the railroad commission gave authority to the company to increase its rates, but the higher scale of operating costs has become effective since that time.

Public Utility Deficits

To supply cheap lights and power the city of Seattle has a deficit in its electric lighting department of $875,000.

Money is to be transferred from the general funds to the depleted light account, and, as usual, public ownership falls back on the taxpayer.

The shortage is to be made up temporarily by using funds from sale of Skagit River power bonds, sold to build another city plant.

On top of this Seattle politicians will again ask home rule powers to take their utilities out of the control of the Public Service Commission.

This means that utilities will be thrown back into city politics, out of which they have been taken for the past six or eight years.—*The Manufacturer.*

Natural Gas Company Asks Increase for Buckhannon

Preliminary steps have been taken by the Buckhannon (W. Va.) Relief Oil & Gas Company, which supplies gas to consumers in Buckhannon, to ask the State public service commission for permission to increase its rates from 15 cents to 25 cents per 1,000 cu. ft.

Expert for Minneapolis Considers 93.07 Cents Fair Rate to be Charged Consumers

A rate of 93.07 cents per 1,000 cu. ft. for gas in 1919 was advanced as fair both to consumers and to the Minneapolis Gas Light Company at the meeting of the City council's special committee on gas rate negotiations Dec. 19.

This is against the present rate of 77 cents.

The figure was submitted by Milo R. Maltbie, New York public utility specialist, employed by the council to study the gas situation and recommend a fair rate to be charged for gas in a new contractual arrangement with the company. Mr. Maltbie stated that his proposed rate was based on his valuation of the gas company property at $5,935,695.

Only Fair for One Year

It was explained that the new rate proposed was advanced as fair only for the coming year and that, because of abnormal business conditions, it was inadvisable to attempt to fix a rate for a 5-year period.

Mr. Maltbie presented figures to show that the actual cost of the company to supply gas in the first six months of this year had been 79.74 cents—more than two cents in excess of the maximum rate fixed by ordinance. However, he added that one cent should be knocked off this loss margin because about that amount on every 1,000 cu. ft. had been received in excess of the ordinance maximum, in general receipts.

Factors Are Set Forth

In giving his "fair value" of the gas property as a basis for rate fixing, Mr. Maltbie presented the factors as follows, as of July 1, 1918:

Land	$357,055
Physical property, excluding land and working capital supplies	4,838,703
Franchises	60,515
Organization and general expenses	10,000
Interest during construction	219,422
Working capital — supplies, stores and cash on hand	450,000
Total	$5,935,695

This physical property valuation, the city's advisor went on, was based on normal reproduction cost as of June 30 last, of all such property except land and supplies carried in working capital, less depreciation. Depreciation was figured in at $1,430,493.

No allowance in valuation estimating was made by Mr. Maltbie for "going concern value" nor for engineering costs, contingencies and taxes under construction.

1919 Cost Problematical

What the cost will be to manufacture gas in 1919, no one knows, Mr. Maltbie said. but he submitted that the actual cost to manufacture gas in the first six months of 1918, based on the company's records, had been 54.14 cents per 1,000 cu. ft.

His statement as to thecost to the company of furnishing gas on that cost-to-manufacture basis follows:

	Cents
Net cost to manufacture	54.14
Other operating expenses, estimated	16.00
Taxes	5.00
Depreciation	4.30
Uncollectable bills	0.30
Total	79.74

Using 7 per cent as a fair interest return on his estimated property valuation of $5,935,695, Mr. Maltbie presented $415,499 as a fair return in 1919. His estimate of volume of gas to be furnished in the year, based on company records, was 2,900,000,000 cu. ft.

This, by division, led to 14.33 cents as a fair return on every 1,000 cu. ft. That added to 79.74 cents, actual cost to furnish, gave 94.07 cents. From that total he subtracted 1 cent for every 1,000 cu. ft. as "general results in excess of maximum rate fixed by ordinance," which left 93.07 cents as his proposed fair rate.

Industries of Indiana to Turn to Coal Released from War Demands to Protect Natural Gas Supply

Additional developments in the situation in eastern and central Indiana, through which the West Virginia natural gas is supplied to the Central Indiana Gas Company and other companies from pipe lines of the Logan Natural Gas Company, have just become public in Indianapolis, where the Central Indiana Company has its petition for increased rates before the public service commission of Indiana.

One of the developments is an order that has just been made by the bureau of natural gas, of the federal fuel administration, at Washington, applicable to all companies supplied by the Logan Natural Gas Company, which runs a pipeline from the West Virginia fields to many communities in Indiana. This order prohibited the supplying of natural gas to consumers other than those in classes one, two and three, and apparently forms a supplemental condition to that resulting when the Indiana commission recently sought to protect the natural gas supply in Indiana by providing for the elimination of industrial uses, when the supply of the Central Indiana company was low.

In a hearing at Washington it was brought out that the supply of gas

was inadequate to supply both domestic and industrial consumers, and it was also revealed that the pipeline company had discontinued serving industrial concerns directly supplied by it, although many of the distributing companies were continuing service to industrial concerns.

The order, it is reported here, holds until April 15, 1919, unless another order is issued in the meantime. It is the intention of the natural gas bureau to supply service first to the consumers in class one, then in class two, and so on. If the supply is not sufficient for all three classes, the last class will be cut off. In any event domestic consumers will be the first to be served. The order from the fuel administration has been sent to the following Indiana companies, in addition to the Logan Natural Gas Company: Richmond Light, Heat & Power Company, Richmond; Lynn Gas Company, Lynn; Interstate Public Service Company, Newcastle; Central Indiana Gas Company, Muncie, Noblesville and Tipton; Middletown Gas Company, Middletown, and Selma Gas Company, Selma.

At the hearing, in which representatives of gas companies from many places in Indiana were present, an especially strong protest against permitting industries either in Ohio or Indiana was voiced from Richmond, Ind., with which was associated ten other cities.

In Richmond only one-seventh of the natural gas consumed goes to industries, while it is asserted that in Muncie one industry alone uses more gas than is required to supply every domestic consumer in Richmond. Figures were produced at the hearing to show that in Muncie, within a two-year period, the industries were permitted to consume 1,500,000,000 cu. ft. more than was used by the domestic consumers there. Thousands of consumers in Indiana were left without fuel for cooking purposes in the cold weeks of last winter, and an even worse condition may be expected this winter, as soon as colder weather sets in, unless industries are prohibited from the use of gas. The manager of the Logan company, at the hearing, warned Indiana gas companies using the Logan supply that they had better begin immediately the manufacturing of artificial gas for the winter period. This situation already has been presented to the Indiana public service commission, and it has approved certain agreements, under which specified Indiana communities take the responsibility of continuing the use of natural gas, and the Central Indiana Gas Company stands ready to begin the manufacture of gas as soon as the various town and city councils become convinced a change should be made from the natural product.

The plan is, of course, for the industries to turn to the use of Indiana and other coals, now released from war demands, and also to the manufactured gas product, or to the installation of their own gas plants, where the industries are large enough to admit of the latter program.

Commission Allows Increase in Rates for Batesville

The public service commission of Indiana, in an order just issued at Indianapolis, points out that the Batesville Gas Company has been furnishing and will furnish gas to its customers at a lower cost than other fuel, and it declares that in simple justice the company is entitled to an increase in rates, at least temporarily. The decision is interesting in view of the fact that the armistice has been signed, and yet the Hoosier commission realizes fully that unusual operating conditions continue and companies must be helped.

The order follows in part:

On Nov. 23, 1918, the Batesville Gas Company filed its petition with the Public Service Commission of Indiana averring:

That because the field from which gas is procured is being rapidly depleted and because of the expense in procuring and distributing the gas, the plant has been operated at a loss, and in 1917, the company filed with the Public Service Commission of Indiana its petition asking for the right to discontinue furnishing natural gas to said city, and for the right to take up its plant; that said petition was heard by this Commission and was in all things granted as prayed; that within the time provided by statute the citizens and consumers of gas in said city of Batesville filed an application in the Ripley Circuit Court asking for a review of said proceedings had before the Commission, which cause was later venued to the Franklin Circuit Court where same came on for trial in November, 1917; that said court took same under advisement and did not pass on same until April, 1918, at which time said Franklin Circuit Court denied the petition for review and in all things approved the finding of the Commission, but within the time provided by law said city of Batesville filed with the Franklin Circuit Court a petition for rehearing, which petition is still pending.

Petitioner further avers that the delay of the Franklin Circuit Court has prevented the dismantling of the plant; that because of the fact that winter is coming on, which would make impossible the taking up of the pipes and dismantling of the plant before the spring of 1919, and whereas the plant cannot at the present rate paid by customers for gas be operated through the coming winter without loss to petitioner unless the rate be raised to $1 per 1,000 cu. ft., with a minimum charge of $1 to each consumer of 1,000 cu. ft. or less.

The Commission finds that in view of the fact that petitioner's gross income for the year 1917 was insufficient to pay a reasonable return upon the fair value of its property and that its operating expenses will be increased, for the coming year, by the amount expended in cleaning and repairing its gas wells, and that petitioner only contemplates furnishing natural gas for a few months longer, and further that the price fixed for gas for said time by the Commission will be a lesser cost than other fuel could be purchased, the Commission is of the opinion that justice demands that a temporary increase in the rates for gas be established and it will be so ordered.

It is, therefore, ordered by the Public Service Commission of Indiana, that the Batesville Gas Company shall file on or before the first day of January, 1919, effective the same day, the following schedule of rates, tolls and charges for natural gas furnished to its patrons in or near the city of Batesville: Said rates to be in effect until the 31st day of May, 1919. Minimum rate of $1.60 for the first 2,000 cu. ft. or fraction thereof used by any one person through one meter during any one month; for the next 5,000 cu. ft., 80 cents per 1,000; for the next 20,000 cu. ft., 75 cents per 1,000; for the next 20,000 cu. ft., 70 cents per 1,000; for all over 50,000 cu ft., 65 cents per 1,000.

THE MASSACHUSETTS GAS COMPANIES trustees recently declared the usual quarterly dividend of 1¾ per cent on the common stock.

Welsbach Company Puts Out New Mantle for Doing Away with Open Flame Burner

Thrift Light Has Become Almost a Necessity to Industry's Welfare

Gas lighting that will not light, naturally, causes annoyance to him to depend on it, even if only at the infrequent periods when electric lights fail. In many cases that is the kind of gas lighting the average consumer who uses open tip burners has encountered of late, due to the recovery of light oils in quantities from the gas.

THRIFT LIGHT (ACTUAL SIZE)

The mantle lamp user has not noticed the difference, a fact which the gas companies have not failed to point out. But an average home requires many lamps. Equipping with mantle lamps throughout at one time is not a step to be undertaken lightly by the average family. In cost it mounts up to the point almost of becoming an investment. A light such as the new "Thrift" light put out by the Welsbach Company has become almost a necessity to the welfare of the gas industry. Doing away with the open flame burner becomes a thing financially possible.

The new "Thrift" burner is regarded as a solution to the open tip problem for the following reasons:

The lamp can be obtained at so low a price that it can be given free to consumers, or can be sold at a price which will cover all costs, including installation, and yet not high enough to be a meterial consideration to the purchaser.

Wide variations in quality of gas and in pressure at the burner do not affect its operation.

No additional parts are required; the old tip and piller are removed and the "thrift" burner screwed upon the same fixture, using the same glassware.

Installation and replacing mantles is so simple that anyone can do it. The only precautions insisted on are that the fixture thread be coated with brown soap or a similar leakage preventative before screwing up, and that the gas shall be turned on until the mantle is completely burned and the glow disappears.

OPEN FLAME REPLACED BY THRIFT BURNER

The small size of the burner enables it to be carried about in quantity, and the small size of the mantle gives it long life and avoids cracking of glassware should a mantle become fractured.

A number of other advantages might be cited as peculiar to the new burner, but it must be remembered that it was designed to replace the open tip to meet an emergency and that the advantages enumerated above were collateral developments rather than the main purpose.

The appearance of the "Thrift" light is shown in the third figure, which is exact size. It has four parts: The brass, threaded, base with gas orifice and knurled edge for the pliers; the steel burner chamber with air ports; the mantle cap and gauze, and the mantle. The chamber is fastened to the base and the cap fits tightly over the burner head without bayonet joint or other device that may worry the user. The construction is so simple that little description seems necessary. However, a few practical details may be mentioned, such as the following:

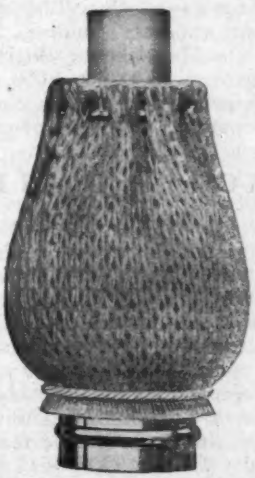
The mantle in its limp state is supplied already tied upon the cap provided with new gauze. It is about two inches long and shrinks to about three-fourths of an inch after burning-off. When packed in its tiny box, a paper tube is inserted in its upper end to protect it and in the burned-off mantle this vent has an important bearing on its operation. In burning-off, the match should be applied at the top and the gas should not be turned on until the glow has disappeared. Then the gas is turned on and lighted and burned for a few moments, the mantle inflating and shaping itself very readily; a few moments' burning is ample to harden the mantle.

The air and gas adjustments in refined burners are delicate operations, but with the "Thrift" burner they are of the utmost simplicity.

The gas orifices are adjusted to consume from two to three cubic feet per hour, giving a luminosity of about 25 to 30 candles. Since consumers sometimes use as high as ten cubic feet in their flat flames, this means a considerable saving to them, and a reduction of complaints.

In these days of coal scarcity a let up in the compulsory domestic demand may be welcomed by many companies.

This open flame burner displacement is a wholesale proposition, and the quantity of these burners installed during the coming year



THRIFT MANTLE AS SOLD

will be numbered by the hundred thousands. In fact, the package contains fifty burners. Now is the time to make changes. The consumer is willing. Many gas companies have been replacing open flames as a permanent policy durthe past year, but there are millions of gas tips yet in operation. It is up to the gas company to do with the open tip what the electric central stations have already done with the old carbon lamp.

North Shore Company Given Extension of Rates

The Illinois Public Utilities Commission issued an order recently extending to July, 1919, the increased rates for gas in Waukegan and other cities in Lake County, served by the North Shore Gas Company, ordered by the commission Sept. 18th last. On July 1, 1919, the rates in effect in Dec. 1917, shall take effect unless new rates are fixed by the commission. The commission reserves jurisdiction to change these rates authorized before July 1.

The gas company previously was given permission to charge $1.30 per 1,000 cu. ft. for gas. This rate was to be in effect until Dec. 31, 1918, when the old rate of $1.10 was to be restored automatically. The latest ruling permits an extension of time in the present rates.

Natick Company Wants Rate Increased

The Natick (Mass.) Gas Light Company has petitioned the Massachusetts Gas Electric Light Commission that the Board set a new price for gas which will be sufficient to meet expenses, interest charges, etc. On May last the Board fixed the price at $1.65 per 1,000 cu. ft., which price the company claims is incompatible with present costs.

Utah Company Checks Reading of Meters

The Utah Gas & Coke Company, Salt Lake City, Utah, has adopted a system of checking on the reading of meters by company agents, so as to make sure no mistake has been made. As the meter is read, the company employee hands the consumer a blank on which is written the number of cubic feet consumed. On the slip is printed three dials, with numbers 1 to 10. The consumer can immediately see for himself where his hands are pointing, and draw lines from the center of the dials on the blanks, to the numerals on the dials. This reading and that of the company's agent ought to be alike. If they do not agree, this check will show that the agent has made a mistake.

Greenfield, Mass., Rate Reduced

The gas and electric light commission recently ordered a reduction in the price of gas in Greenfield, Mass., from $1.80 to $1.70 per 1,000 ft. The reduction will become effective Jan. 1. The $1.70 rate was fixed by Commissioners Weed and Lewenberg, but Commissioner Schaff, in a minority opinion, holds that the cost of gas at the burner, including interest, dividends and depreciation does not exceed $1.65.

The company increased the price from $1.50 to $1.65 Dec. 1, 1917, and on May 1, last, to $1.80.

Personal Notes

CHARLES S. SPAULDING was recently elected manager of the Wakefield (Mass.) municipal lighting plant, at a meeting of the commissioners. He has lately been superintendent of the Newburyport Gas & Electric Company, a position he had held for twenty years, and from which he had resigned with the intention of withdrawing from business life. Whitney L. Cole, the former manager of the lighting plant, retired recently on account of ill-health, and as Mr. Spaulding had had experience with the plant from 1894 to 1898, he was chosen as Mr. Cole's successor.

E. D. BREWER, for the past year director of publicity of the gas department of the Columbia (S. C.) Railway, Gas & Electric Company, has recently resigned his position with that company to accept an offer made by the Ruud Manufacturing Company of Pittsburgh. Mr. Brewer will be Southern manager for this concern and will make his headquarters in Atlanta, Ga. Before coming to Columbia, Mr. Brewer was with the Atlanta Gas & Light Company two years, and for six years has been secretary of the Southern Gas Association. He was with the General Gas Light Company of New York for five years. His successor has not as yet been appointed.

CLARK R. GRAVES, who resigned as local manager of the Lansing (Mich.) Fuel & Gas Company, again assumed his duties in that capacity Dec. 26. Mr. Graves, since leaving the company, has been engaged in the cartage and storage business. He has turned over his motorized equip

CLARK R. GRAVES

ment to the gas company, and the company will from this time on deliver its own fuel products. C. H. Stone, who resigned as manager of the company, has gone East, where he will engage in the gas business.

C. WILLING HARE, of Radnor, Pa., former manager of the new business department of the United Gas Improvement Company, has been appointed assistant director of munitions in the war department, it was announced recently. This department has been enlarged to take over the care and disposition of property acquired by the war department since America got into the war. For some months Mr. Hare has been in Washington as chairman of the advisory committee to the secretary of war.

WALTER M. RUSSELL, of the Providence (R. I.) Gas Company, read a paper on "The Recovery of Light Oil," at the chemical section of the Providence Engineering Society meeting recently.

F. N. HAMERSTROM, commercial manager for the Welsbach Company, Gloucester, N. J., from May 10, 1910, to Jan. 1, 1919, has resigned this position to go into business for himself, under the name of The Essex Rubber Company, with offices in Trenton, N. J. Previous to entering the Welsbach Company Mr. Hamerstrom was sales manager of the Thermoid Rubber Company,

F. N. HAMERSTROM

Trenton, N. J., from 1904 to 1910, and from 1897 to 1904 was with the Simmons Hardware Company, St. Louis, Mo., in the purchasing department. The Welsbach Golf Club gave Mr. Hamerstrom a farewell dinner of twenty-six covers at the Ritz Carlton, Philadelphia, Pa., on Friday, Dec. 13.

CHARLES W. ISBELL died at his home, No. 123 West Eighty-first Street, New York City, on Dec. 24, 1918, in his 88th year. Until his retirement from active business some years ago, Mr. Isbell was well known through his connection with the Isbell-Porter Company, of Newark, N. J., as a manufacturer of gas-producing and refrigerating machinery. Mr. Isbell was one of the founders of the Smith & Sayre Manufacturing Company at New Haven, Conn., which was established there in 1865, but almost immediately moved to Jersey City, N. J. In 1871 the Smith & Sayre Manufacturing Company, after a serious fire, again removed to Newark, at the corner of Bridge and Ogden Streets. In 1890 the Smith & Sayre Manufacturing Company was succeeded in business by the Isbell-Porter Company, which was largely at that time owned by Mr. Isbell, in conjunction with the late George G. Porter. In 1903 Mr. Isbell retired as president. Mr. Isbell was chairman of the Board of Directors until his death. For many years he was secretary and a director of the B. P. Clapp Ammonia Company, of New York City. He was the inventor of the Isbell gas valve and also various appliances and improvements used in connection with the production of illuminating gas. Mr. Isbell was known as a friendly man. He invariably had a kind word and cheerful greeting for everyone. During his active years he was popular and very highly esteemed, both personally and socially.

THOMAS TROY, for forty years with the Manhattan Gas Company, where he was superintendent of construction, died recently in Richmond Hill at the age of 88 years.

Societies and Associations

THE NATURAL GAS ASSOCIATION met Dec. 19 in the William Penn Hotel and appointed a committee to select a place to hold the annual convention next May. The committee includes R. W. Gallagher, of the East Ohio Gas Company; H. G. Hoover, of the Union Gas & Electric Company, Cincinnati, and David O. Holbrook, the secretary of the association. T. B. Gregory, chief of the natural gas distribution of the United States Fuel Administration, spoke on the gas situation.

THE PACIFIC GAS & ELECTRIC COMPANY employees held the annual Christmas celebration Dec. 19 at Native Sons' Hall, San Francisco, Cal. The affair took the form of a dance, varied with a program of music and entertainment, the chief feature of which was the singing of patriotic songs. It was held under the direction of the Pacific Service Employees' Association. The guests numbered 500. Excellent music was furnished by the Pacific Service Orchestra, composed entirely of employees. Dancing continued until midnight. Other features included selections by the Athenian Quartet and vocal solos by Mrs. W. W. Florence of San Mateo. All arrangements were carried out under direction of a committee of women employees, and the affair was voted an unusual success. Previous to the ball K. I. Dazey, the retiring president of the Pacific Service Employees' Association, was entertained at a dinner by the members of the executive committee and their wives at the Hotel Stewart. Lowell Redfield provided a program of vocal entertainment during dinner, at the conclusion of which President Dazey was presented with a silver cigarette case by the members as a tribute of their esteem.

Construction Notes

Manitowoc Gas Company to Build Holder—Double Capacity

To meet the needs of increased service on the South Side due in part to the addition of Riverview and its 100 homes to the city, the Manitowoc (Wis.) Gas Company has approved plans for erection of a new holder on the south side, and has perfected plans for improvements that will double the present capacity of the plant. Work will be started at once.

Coincident with the announcement of plans it was announced by Manager Eastman that the company had purchased nine lots at Twenty-first and Franklin Streets as a site for the new holder. The property was formerly owned by F. Veith and others, and will give the gas company a plant 225 by 240 feet ft. The new holder will be partially underground and will be a height ot only twenty feet.

The new holder will provide pressure for the service on the south side, which has been one of the obstacles which the company has had to contend with, and which last year prompted the installation of a booster unit at the plant at the foot of Chicago Street which was put in at a cost of $3,000. While the addition operated to relieve the situation somewhat, it did not meet the needs, and especially with the increase at

Riverview additional pressure is needed.

In addition to the holder the company will install an old gas set as an auxilliary at Twenty-first and Franklin Streets.

The gas company has plans for extensive improvements during the next year or two, at an estimated cost of over $100,000, said Mr. Eastman. The capacity of the plant, which is now 25,000 cu. ft. of gas a day, will be doubled within that time, he said, the company having faith in the growth and development of the city.

Springfield Company to Erect Chemical Building

A chemical building in Water Street, Springfield, Mass, is to be built by the Springfield Gas Light Company for $5,700.

Memphis Company Takes Out Building Permit

A permit for a new construction work to cost approximately $320,000 has been issued by the city building inspector to the Memphis (Tenn.) Gas & Electric Company.

It is understood that the contemplated construction is for improvements to the gas plant.

Contemplate Erecting New Holder at Easton, Md.

S. M. Kittsmiller, owner of the Easton (Md.) Light & Fuel Company plant, was in Easton recently looking over his property there. He is planning to erect a new gas holder as soon as possible and to make other improvements to the plant. He thinks sufficient supplies are now on hand to take care of the plant during the winter, thus being assured of an uninterrupted service in spite of any possible transportation tie up.

Plymouth Company Petitions for Higher Rate—Finds $2 Rate Inadequate

The Plymouth (Mass.) Gas Company, claiming that the present $2 rate for gas at present allowed is inadequate and confiscatory, has petitioned the board of gas and electric light commissioners to revise its decision of Oct. 10 when present rate was fixed, so that it may be enabled to pay for the cost of manufacturing and distribution of gas, meet its interest charges and pay a reasonable dividend. The company claims that the cost per 1,000 cu. ft. for year ended Sept. 1, 1918, was $2.50, and that the cost for the four months of May to August, inclusive, 1918, less depreciation, was $2.65, which means that the company is operating with a large deficit in sight.

Massachusetts Gas—November Net Earnings Show Decrease of Nearly 48 Per Cent

Massachusetts Gas reports combined net earnings of its subsidiaries for November of $242,736, a decrease of 45.8 per cent under November last year.

Net earnings available for dividends compare as follows:

	Gas	Miscellaneous	Total
November:			
1918	$114,774	$127,962	$242,736
1917	133,353	275,141	408,495
1916	146,679	229,903	376,582
1915	150,744	121,154	271,898
1914	151,680	92,820	241,510
Jan. 1 to Nov. 30:			
1918	$1,154,236	$3,459,251	$4,613,488
1917	1,414,481	3,134,597	4,549,079
1916	1,528,153	2,582,973	3,111,126
1915	1,454,794	1,128,823	2,583,217
1914	1,358,833	1,116,016	2,476,850

The increases in gas outputs for November and eleven months compare with increases for corresponding month last year as follows (in per cent):

	Month		Eleven Months	
	1918	1917	1918	1917
Boston Consolidated	3.17	5.87	5.11	8.03
East Boston	30.30	5.64	12.77	8.85
Citizens'	21.70	15.77	25.80	13.33
Newton & Watertown	9.76	9.38	12.76	11.79

The Magnolia Gas Products Company, Houston, Texas; capital stock $100,000. Incorporators, B. D. Cash, L. L. Sinclair, W. H. Walne.

The United Gas & Electric Company, subsidiary operating companies:

	1918	1917	Decreases
October gross	†$915,904	$1,398,952	$483,048
Net after taxes	184,410	491,305	306,895
Surplus after taxes	71,464	188,345	116,881
Twelve months' gross	16,158,281	16,093,447	*64,834
Net after taxes	4,420,699	6,299,111	1,878,412
Surplus after charges	1,285,424	2,752,899	1,467,475

*Increase.

†Includes earnings of International Traction Company, on which operation was suspended twenty-four days on account of strike.

The Alum Rock Gas Company has declared a special dividend of 2 per cent in 4¼ per cent Liberty loan bonds to stockholders of record Dec. 20; fractional parts of $50 will be paid in cash.

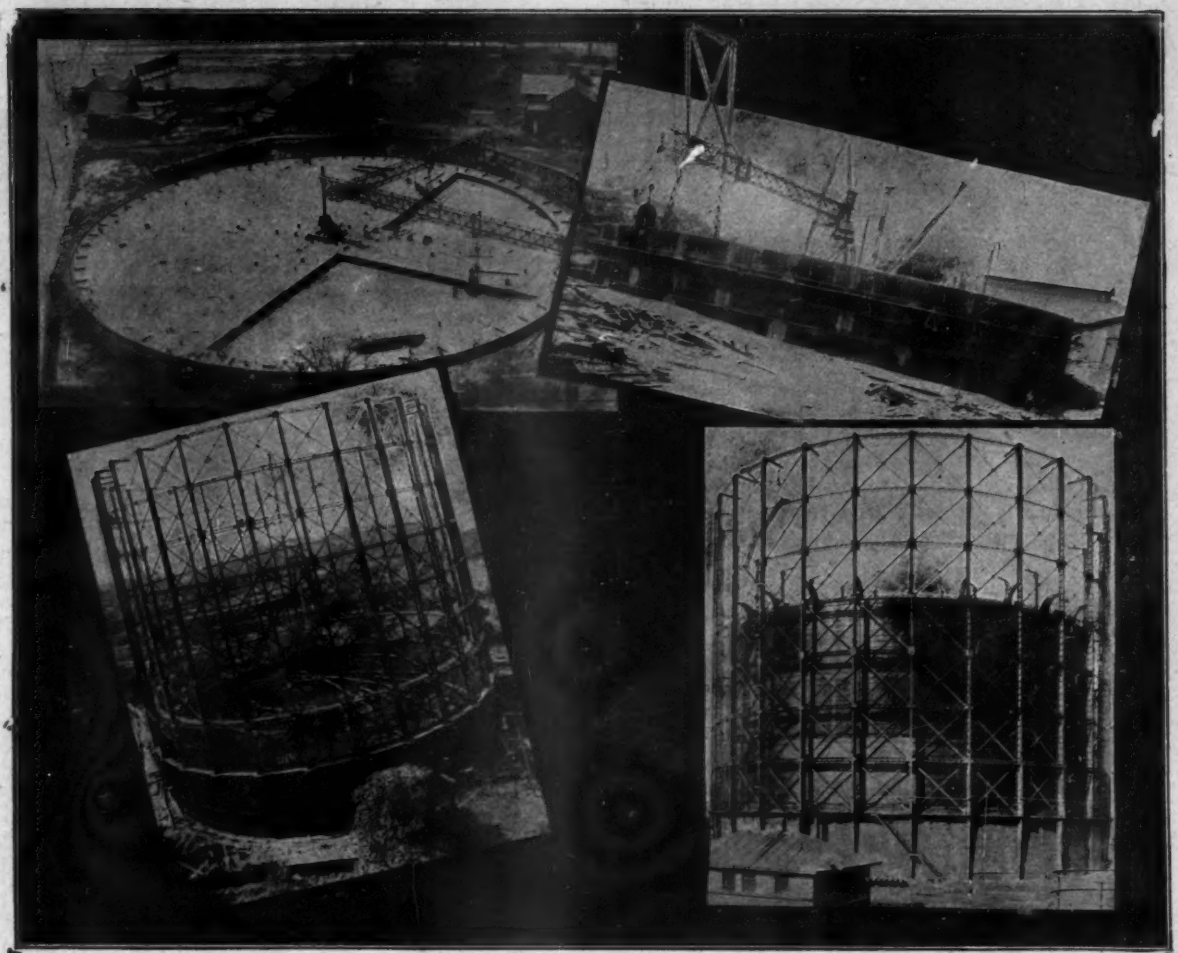
The Midway Gas Company, which operates pipe line from California fields to Los Angeles, has declared an amortization dividend of 20 per cent on its $692,350 preferred stock, payable Jan. 30. Payment of this dividend will reduce par value of shares to $80.

The San Diego Consolidated Gas & Electric Company was granted authority by the railroad commission to use the proceeds from the sale of $30,800 of its five-year 6 per cent collateral trust gold notes, to finance in part its construction expenditures from Sept. 1 to Oct. 31, 1918.

The New York Mutual Gas Light Company declared a semi-annual dividend of 4 per cent, payable Jan. 10 to stock of record Dec. 27.

The United Gas Improvement Company declared a quarterly dividend of 2 per cent, payable Jan. 15 to stock of record Dec. 31.

The Simplex Oil-Gas Burner Company, Wilmington, Del. Incorporated to manufacture Simplex oil-gas burners, etc.; capital, $100,000.



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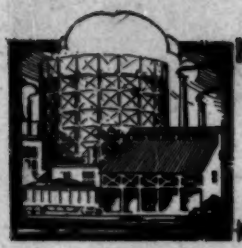
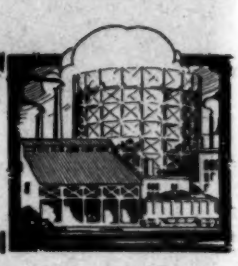


With The Equipment & Appliance Manufacturers



Conducted by Business Department of American Gas Engineering Journal

A New Insulating Brick for Furnaces and Retorts

A new insulating refractory brick has just been put on the market by the Quigley Furnace Specialties Company, 26 Cortlandt Street, New York. The patented name for this brick is "Insulbrix."

It is claimed for this brick that it will not lose any of its insulating value, strength or size when subjected to heat and use in furnace walls. The fusing point of Insulbrix is 2,900 deg. F., and no shrinkage is shown at 1,800 deg. F. They can be used very close to the high heat zone, as it is claimed they will stand up in case the fire brick becomes worn thin.

It has a crushing strength of over 425 pounds to the square inch, and so can be used where the thrust of an arch or heavy weight is encountered, permitting thinner walls, thus simplifying and cheapening furnace construction.

The bricks are formed and repressed before burning, so as to give square corners. The high tensile strength, stand and shape permit their being tied into fire brick walls as an integral part of the furnace wall.

They are close grained and have no artificial porosity or large voids and no shrinkage, air leakage is minimized, and the penetration of hot gases under forced conditions is prevented. The weight is approximately 3¼ pounds.

They are made in standard firebrick sizes and special shapes by a patent process of Insuline, which is a natural, cellular, refractory material, composed of diatomateous silica, which has the highest insulating value of any known natural refractory material, due to the diatomes containing thousands of microscopic air cells.

New Catalog on Chemical Apparatus of Special Interest to Gas Men

The Stevens-Aylsworth Company, Inc., 253 Broadway, New York, manufacturers of chemical apparatus and special machinery, recently issued Catalog No. 2. It is very completely illustrated with half-tone cuts, and a large number of drawings of the different pieces of apparatus they manufacture. It is also replete with valuable tables of weights and measurements. A part of one table is given below:

For riveted work, rivets should, wherever possible, be in the shear and not in tension.

A single riveted joint has about 56 per cent of the strength of the plate.

A double riveted joint has about 70 per cent of the strength of the plate.

For high pressure the plates should butt and have a strap inside and outside and be at least double riveted each side of the seam.

1 Heat Unit or B.t.u. is the heat required to raise one pound of water from 39 deg. Fahr. to 40 deg. Fahr.

1 Foot Pound is the energy required to raise one pound, one foot per minute.

1 Horse Power equals 42.416 B.t.u. per minute or 33,000 foot pounds per minute.

The apparatus of special interest to gas men is their "Given" Sulphur Extractor for the reclamation of spent oxide and the production of crude sulphur. Catalog will be sent on request.

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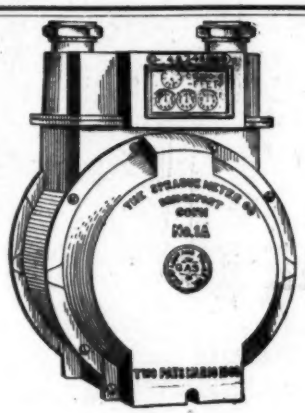

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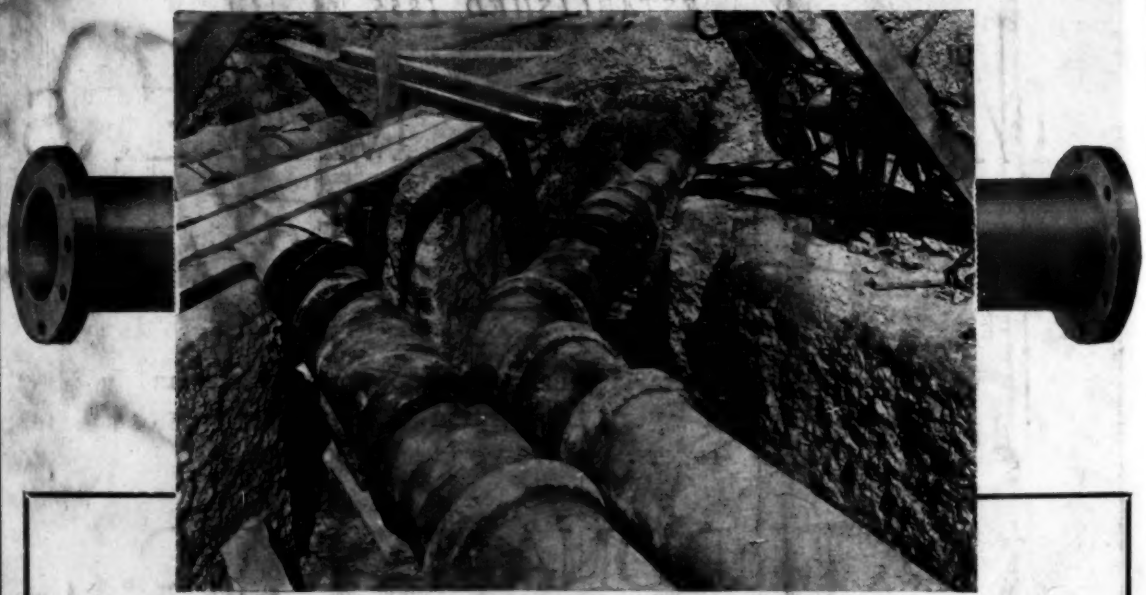

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